

November 1, 1956

Dr. P. R. Edwards
Box 185
Chamblee, Ga.

Dear Phil:

I am still hoping to hear from you that you can visit us this fall for two or three days. (I trust you received my letter of some weeks ago, renewing our earnest invitation). The Orskovs have been here about a week now, and are well settled at home and in the lab, in a program on coli immunogenetics. With the use of more sensitive methods, we are finding that a larger and larger proportion of the serological type strains can be crossed.

There are a number of immunogenetic problems we are very anxious to discuss with you at length, and I do hope you will be able to make this trip.

Iino has been following up the genetics of the phase-2 "monophasic mutant" from TM2 (your 53-2034) and we can now give a fairly explicit account of it. It still carries the original H_1^1 and $H_2^{1.2}$ factors, and undergoes phase variation between them. However, it also carries a third factor, not yet named so let us call it Sph1 (suppressor of phase 1) whose effect is to render the normal phase-1 ineffective, so that bacteria in this phase are non-flagellate and non-motile. This evidence for this is fairly good, as the Sph1 factor can be transduced in and out of the stock, and is separable from the H_1 factor which it modifies. By stringent selection with anti-1.2 serum, mutations of the Sph1 factor to the normal condition can be selected, and normal phase variation is restored.

This situation is very closely similar to what you described for SW-629 (Seligmann's E. coli)- in fact, in our hands, identical as we have not been able to detect an "i" reaction of the "X" phase, and the cells were nonflagellate. [It is quite conceivable that under different conditions or in different media there would be different degrees of suppression of phase-1]. However, the genetic basis of the immotile phase-1 of SW-629 is quite similar to that of 53-2034, except a) the Sph1 factor is not precisely identical, and the two show a low rate of recombination in transduction trials, and b) the Sph1 factor of SW-629 rather more frequently reverts to give normal i:1.2 types, such as you already described.

I still haven't gotten around to the paper on the $H_1^b H_1^{1.2}$ java strains, but this is only a year overdue.

Sincerely,

Joshua Lederberg